

Application No. 09/521,901
Reply to Office Action of June 16, 2003

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 3-6, 8, and 22 are currently pending. Claim 2 has been canceled without prejudice and Claims 1, 3, 5, and 6 have been amended by the present amendment. The changes to Claims 1 and 3 are supported by the originally filed specification and do not add new matter.

In the outstanding Office Action, Claims 1-6 and 22 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,857,737 to Kamae et al. (hereinafter "the '737 patent"); and Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the '737 patent in view of U.S. Patent No. 5,793,045 to DiFlippo et al. (hereinafter "the '045 patent").

Amended Claim 1 is directed to a nuclear medical diagnostic apparatus, comprising, *inter alia*: (1) a radiation detector in the form of a single layer including a plurality of semiconductor cells that are arranged in a matrix, detect radiation separately, and output signals representing an energy of the radiation separately; (2) a selection circuit which, in order to select among events wherein radiation is detected, a specific even wherein radiation derived from a radio-isotope injected into a subject is detected and a total energy of not less than two respective signals substantially simultaneously output from not less than two semiconductor cells falls in a predetermined energy window; (3) a position calculation circuit that calculates an incidence position based on *a position selected from positions of the not the less than two semiconductor cells*; and (4) a counting circuit configured to count a specific event in association with the calculated incidence position. Claim 1 has been amended to clarify that the position calculation circuit calculates an incident position *based on a position selected from positions of the not less than two semiconductor cells*. Since the limitation

added to Claim 1 was recited in Claim 2, Claim 2 has been cancelled without prejudice.

Accordingly, the changes to Claim 1 are supported by the originally filed specification and do not add new matter.

The '737 patent is directed to a gamma ray detecting unit formed of a plurality of radiation detectors arranged in layers, as shown, for example, in Figures 1 and 2. Using energy and momentum conservation laws, the '737 detecting unit attempts to compute the reaction sequence and the scattering angle of multiple Compton scatterings within the detecting unit. As shown in Figure 2, the '737 patent discloses calculating an angle range of the gamma ray incidence (i.e., the conical surface C shown in Figure 2) at an initial incidence position (x1, y1, z1) of the gamma ray based on subsequent incident cell positions in the multilayer detection unit and physical scattering laws. In particular, the '737 patent discloses a system in which:

...[i]t is possible to estimate correctly the sequence, according to which the reactions have occurred, with a high probability and to confine the direction of the incident γ -ray to a conical surface, whose apex is the electric signal generating point, where it is presumed that the 1st Compton scattering has occurred, and whose rotation axis is a straight line connecting the two points, where it is presumed that the 1st and 2nd Compton scatterings have occurred, respectively, as indicated in FIG. 2.¹

However, Applicants respectfully submit that the '737 patent fails to disclose a position calculation circuit that calculates an incidence position based on a position *selected* from positions of not less than two semiconductor cells (in a single-layer radiation detector) from which two respective signal are substantially simultaneously output, as recited in amended Claim 1. The '737 patent is silent regarding an incident position being *selected* from the positions of not less than two semiconductor cells. Accordingly, Applicants respectfully traverse the rejection of Claim 1 (and dependent Claims 3-6 and 8) as anticipated by the '737

¹ '737 patent, column 8, lines 47-57.

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patent. Moreover, Applicants respectfully submit that the rejection of Claim 2 is rendered moot by the present cancellation of that claim.

Regarding the rejection of dependent Claim 8 under 35 U.S.C. § 103(a), Applicants respectfully submit that the '045 patent fails to remedy the deficiencies of the '737 patent, as discussed above. Accordingly, Applicants respectfully submit that the rejection of claim 8 is rendered moot by the present amendment to claim 1.

Claim 22 recites limitations analogous to the limitations recited in amended Claim 1. In particular, Applicants note that Claim 22 recites "calculating an incident position of the radiation based on a position of only one of the not less than two respective signals output from the not less than two semiconductor cells." Accordingly, for the reasons stated above for the patentability of Claim 1, Applicants respectfully traverse the rejection of Claim 22 as anticipated by the '737 patent.

Thus, it is respectfully submitted that independent Claim 1 (and dependent Claims 3-6 and 8) and independent Claim 22 patentably define over any proper combination of the '737 and '045 patents.

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Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.


Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/03)
EHK/KMB

I:\ATTY\KMB\0039\7808\00397608-AM.DOC


Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870
Kurt M. Berger, Ph.D.
Registration No. 51,461